Water Supply Outlook

February 2004

California Nevada River Forecast Center
NOAA National Weather Service
Sacramento, California

DEFINITIONS:

Acre-Feet: The volume equal to one acre covered one foot deep (43,560 cubic feet).

Forecast Period: Generally, April 1st through July 31st, unless otherwise noted.

April-High Forecast Period: For the Lake Tahoe Stage Rise, the period from April 1st to the highest recorded lake stage level.

April 1st Average: The April 1st snowpack average is used as a reference point because it is normally the end of the winter snowfall season and the beginning of the spring runoff season.

Residual Period: The forecast period from the first of the current month through September 30th.

Probability Forecasts: Precipitation and snowfall accumulation of known probability as determined by analysis of past records are utilized in the preparation of probability runoff forecasts. The forecasts include an evaluation of the standard error of the prediction model. The forecasts are presented at three levels of probability as follows:

- **Most Probable Volume:** Given the current hydrometeorological conditions to date, this is the best estimate of what the actual runoff volume will be this season.
- **Most Probable Volume (% Normal):** Most probable volume in percent of the 1961-1990 average.
- **Reasonable Maximum Volume:** Given current hydrometeorological conditions, the seasonal runoff that has a 10 percent chance of being exceeded.
- **Reasonable Minimum Volume:** Given current hydrometeorological conditions, the seasonal runoff that has a 90 percent chance of being exceeded.

SNOTEL: Acronym for SNOw TELemetry. This is a automated snow measurement system operated by the USDA - Natural Resources Conservation Service. These sites use meteor burst communications technology to transmit hydrometeorological information such as snow water equivalent from snow pillows, accumulated precipitation and maximum, minimum and average air temperature.

Water equivalent: The depth of water that would result from melting the snowpack at a point.

Water Year: The period from October 1st through September 30th.

General Outlook

February 1, 2004

After a productive December, January turned out to be disappointing with many of the water supply forecast points in California receiving much below average precipitation except for some of the northern basins in the Sierra Nevada. Substantial precipitation fell during the beginning of January but amounts tailed off during the remainder of the month. This has resulted in a downward revision of most of the April-July streamflow forecasts in California. Improved snow pack conditions in the upper Klamath Lake and Humboldt basins have resulted in a modest increase of the forecast runoff for those areas since last month.

Storm tracks generally favored the northern portion of California during January. Monthly amounts ranged from 90 percent in the Trinity basin, 75 percent in the lower Klamath basin, 65 percent in the upper Sacramento and 55 percent in the Yuba. January rainfall amounts were much below average in the San Joaquin and Tulare basins. The Truckee and the Carson basins received 50 percent of the monthly average and the Walker 40 percent. About 100 percent of the January average fell in the upper Klamath basin and 75 percent in the Humboldt basin.

The California Department of Water Resources reports that snow packs are about 130 percent of the February 1st average in the northern Sierra Nevada basin, 105 percent in the central and 98 percent in the southern Sierra. The April 1st average stands at 83 percent for the northern Sierra, 65 percent for the central and 58 percent for the southern Sierra. Snow packs in the Tahoe-Truckee, Carson-Walker and Humboldt basins are about 110 percent of the average-to-date. The upper Klamath basin snow pack stands at 115 percent of the average-to-date.

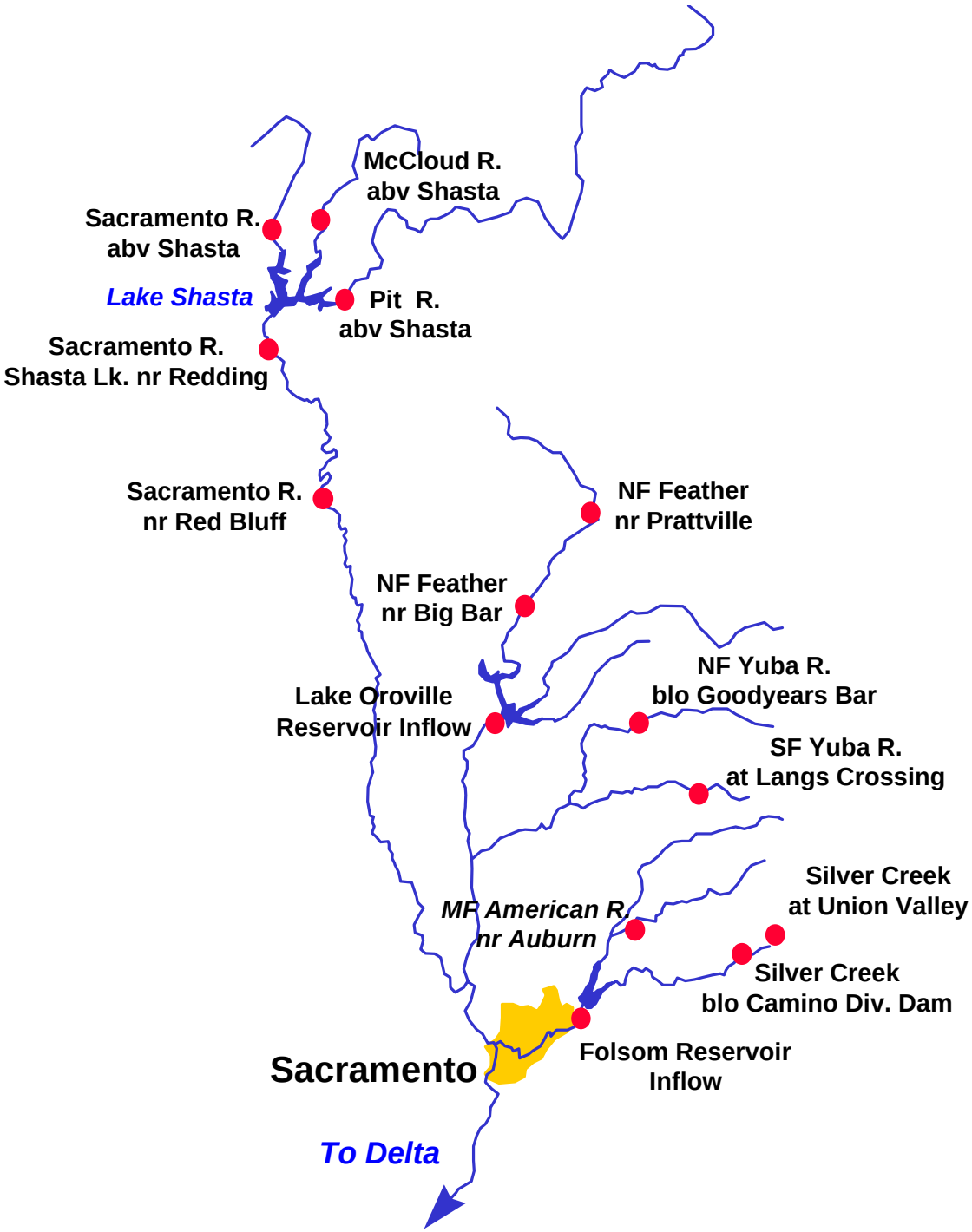
The monthly runoff average decreased from December due to the predominantly cool and dry conditions. It was 82 percent for the Shasta inflow followed by 79 percent in the Trinity. Monthly averages then decrease from 55 percent for the Feather inflow at Oroville to 32 percent for the Tule. The upper Klamath basin received 67 percent of the January average while it was only 33 percent for the Humboldt River at Palisade.

Most of the major reservoirs in California's Sacramento and San Joaquin valley remain at or slightly above the historical average as of January 31st. Stored water in the Sacramento basin was at 100 percent of average for the date, the San Joaquin at 104 percent, and the Tulare Lake basin at 68 percent. East-side Sierra reservoirs were at 37 percent of average. Storage at Lahontan Reservoir in Nevada stands at 78 percent while Rye Patch Reservoir is at only 15 percent of the average-to-date.

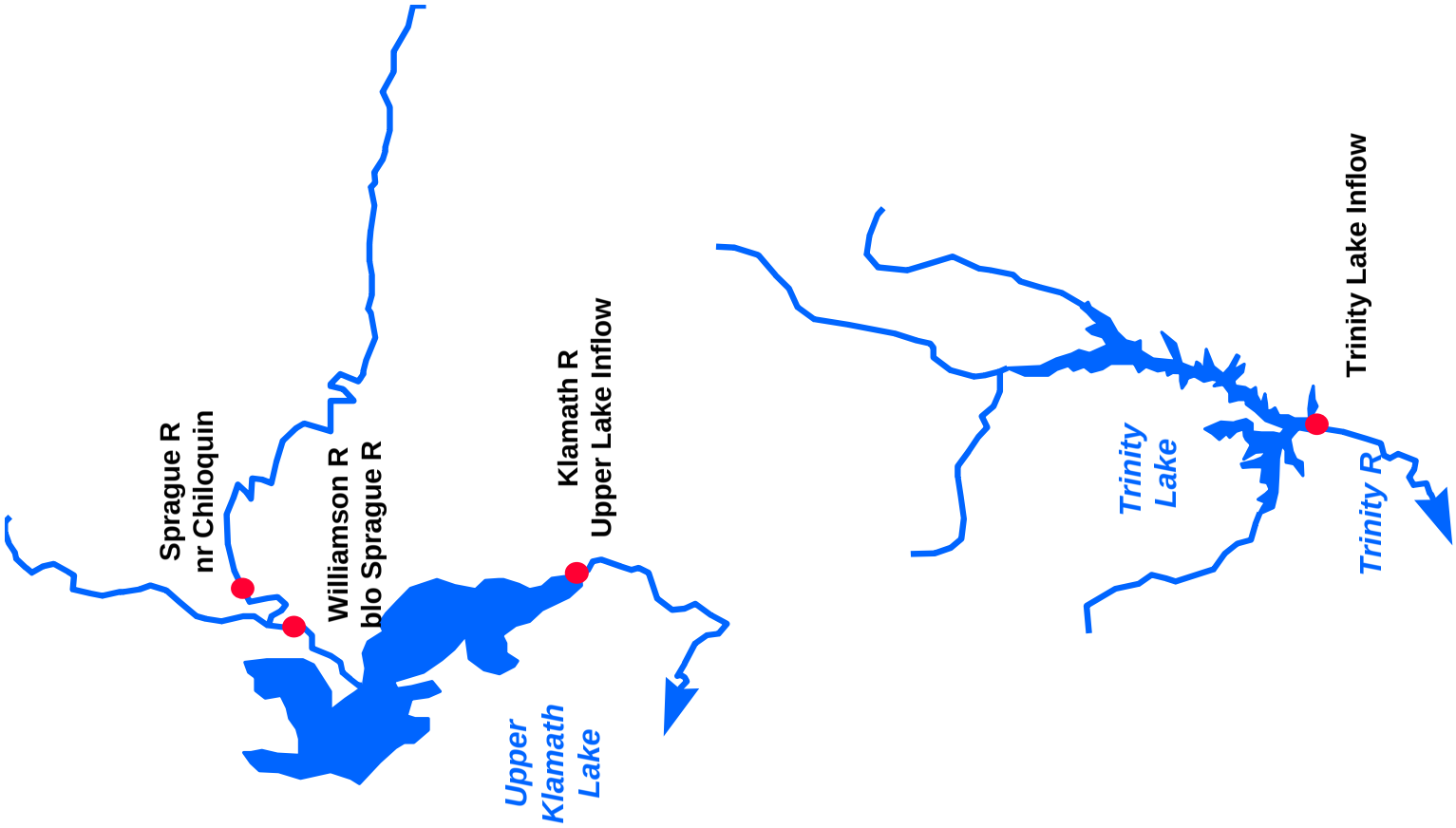
The April through July runoff forecasts vary from 115 percent for the Trinity River inflow to 67 percent in the Kern river basin. Forecasts range from 73 to 96 percent for east-side Sierra streams and 78 to 95 percent in the Humboldt basin. The March through September forecast for the upper Klamath Lake inflow is 83 percent.

The Water Supply Outlook is available on the World Wide Web at http://www.wrh.noaa.gov/cnrfc.

Sacramento River Basin



Upper Klamath and Trinity River Basins



Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
COASTAL BASINS						
Williamson River						
Sprague, blo	Mar-Sep	430	85	580	280	505
Sprague River						
Chiloquin, nr	Mar-Sep	215	70	285	140	305
Upper Klamath Falls River						
Inflow	Mar-Sep	595	83	800	390	715
Lost River						
Gerber Reservoir Inflow	Feb-Jul	33	70	52	14.0	47
Clear Lake Reservoir Inflow	Feb-Jul	85	81	136	34	105
Trinity River						
Trinity Lake Inflow	Apr-Jul	730	115	1110	500	635

Trinity River – Inflow at Lewiston Lake Distribution (kAF)

Exceedence Probability	Oct-Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Pct/Avg
50%	310	160	210	250	290	150	40	20	10	1440	103
90%	310	80	145	180	200	90	30	10	5	1050	75
10%										2150	154

SACRAMENTO RIVER BASIN						
SACRAMENTO RIVER ABOVE BEND BRIDGE						
Pit River						
Montgomery Ck, nr	Apr-Jul	980	92	1270	685	1070
Mccloud River						
Shasta Lk, abv	Apr-Jul	380	103	515	245	370
Sacramento River						
Delta	Apr-Jul	290	100	430	150	290
Shasta Lake, Redding, nr	Apr-Jul	1700	95	2350	1050	1790
Bend Bridge, abv, Red Bluff, nr	Apr-Jul	2290	94	3290	1300	2440
FEATHER RIVER ABOVE OROVILLE RESERVOIR						
NF Feather River						
Prattville, nr	Apr-Jul	265	80	365	170	333*
Big Bar	Apr-Jul	865	90	1290	440	962*
Feather River						
Oroville Reservoir Inflow	Apr-Jul	1650	94	2530	770	1760

Water Supply Forecasts

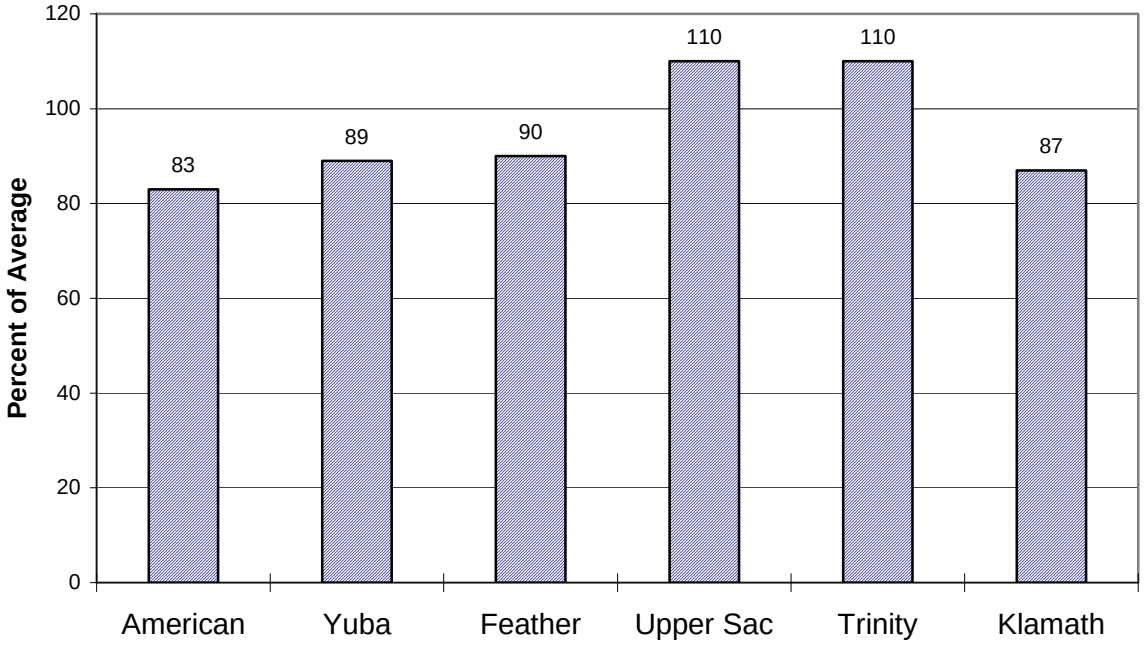
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
YUBA RIVER ABOVE SMARTVILLE						
North Yuba River						
Goodyears Bar, blo	Apr-Jul	265	97	390	142	273*
South Yuba River						
Langs Crossing	Apr-Jul	215	96	315	113	225*
Yuba River						
Smartville, nr	Apr-Jul	965	97	1490	440	995
AMERICAN RIVER ABOVE FOLSOM RESERVOIR						
MF American River						
Auburn, nr	Apr-Jul	470	96	725	215	490*
Silver Ck						
Union Valley	Apr-Jul	94	96	134	54	98*
Camino Dam, blo	Apr-Jul	150	95	235	64	158*
American River						
Folsom Reservoir Inflow	Apr-Jul	1180	96	1800	560	1230

***30 Year Averages for 1971-2000 are incomplete. Those forecast points with an asterisk have incomplete averages, so 1961-1990 averages are listed. The new averages will be incorporated into this report when the complete data sets become available.**

Sacramento/Trinity/Klamath River Basins

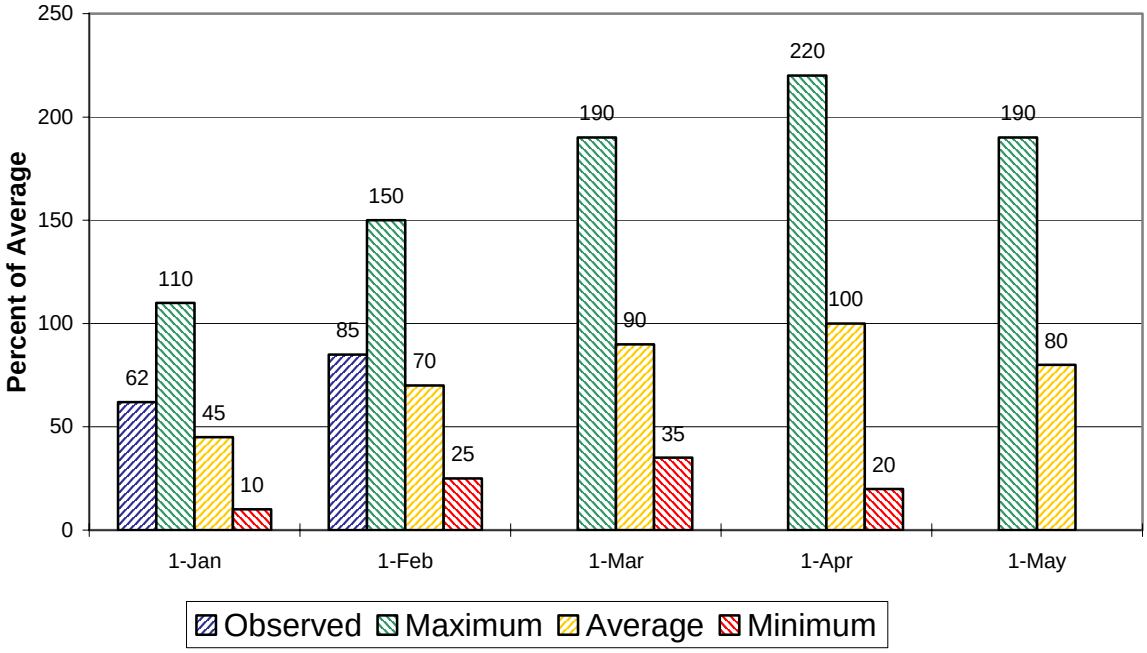
Seasonal Basin Precipitation

October 1 to Date



Seasonal Basin Snowpack

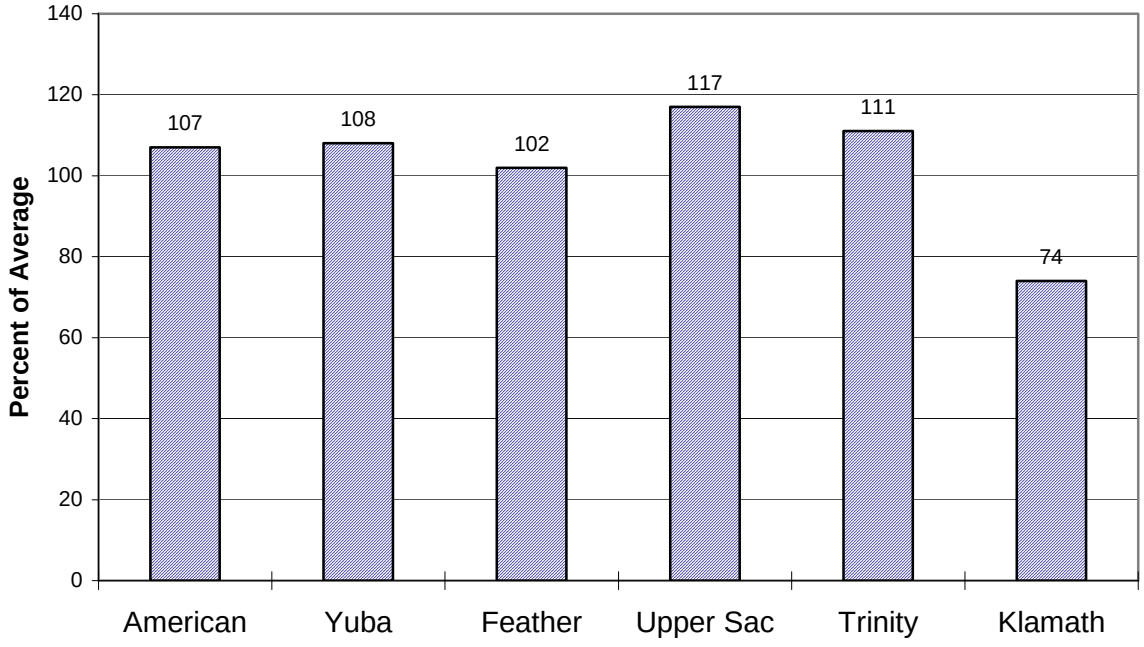
Water Content in % of April 1 Average



Sacramento/Trinity/Klamath River Basins

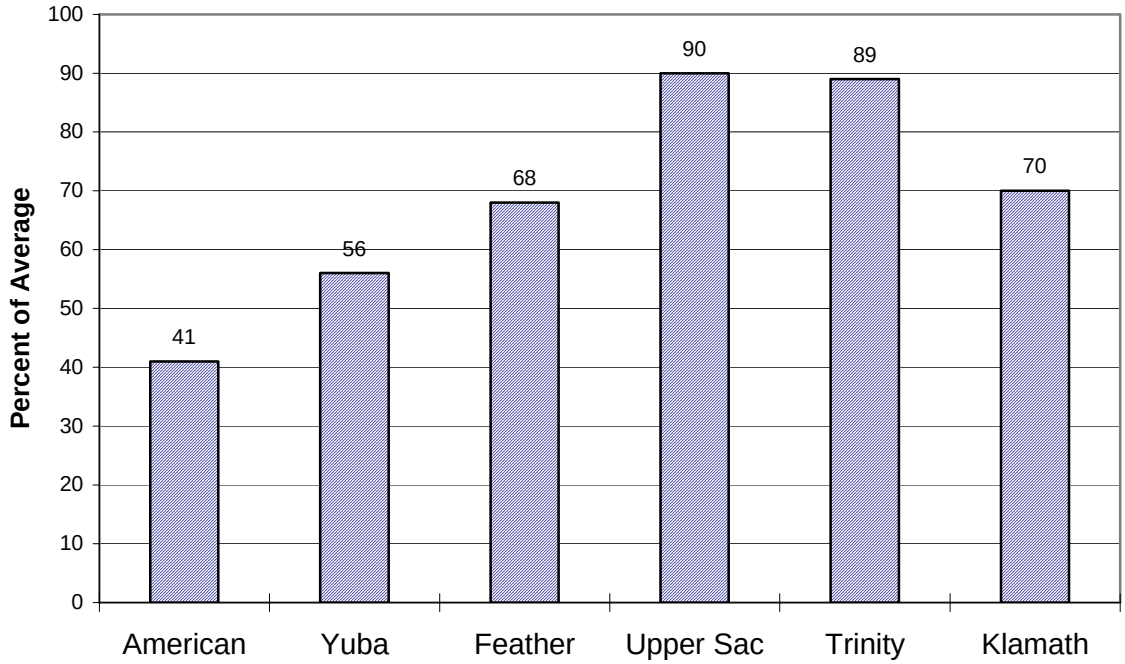
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average



Seasonal Basin Runoff

October 1 to Date



San Joaquin Basin

Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
SF San Joaquin River						
Hooper Ck, blo, Florence Lk, nr	Apr-Jul	170	89	300	88	192*
San Joaquin River						
Millerton Lk	Apr-Jul	1070	84	1800	550	1270
Merced River						
Pohono Bridge, at, Yosemite, nr	Apr-Jul	330	92	600	170	360*
Merced Falls, blo	Apr-Jul	550	85	880	250	645
Tuolumne River						
Hetch Hetchy, nr	Apr-Jul	560	94	900	350	596*
La Grange, nr	Apr-Jul	1150	93	1950	680	1230
MF Stanislaus River						
Beardsley Dam, blo	Apr-Jul	300	94	625	150	320*
Stanislaus River						
Goodwin Dam, blo, Knights Ferry	Apr-Jul	660	95	1100	325	695
NF Mokelumne River						
West Point	Apr-Jul	390	94	625	160	416*
Mokelumne River						
Mokelumne Hill	Apr-Jul	420	91	650	200	460
Cosumnes River						
Michigan Bar	Apr-Jul	105	85	225	50	123

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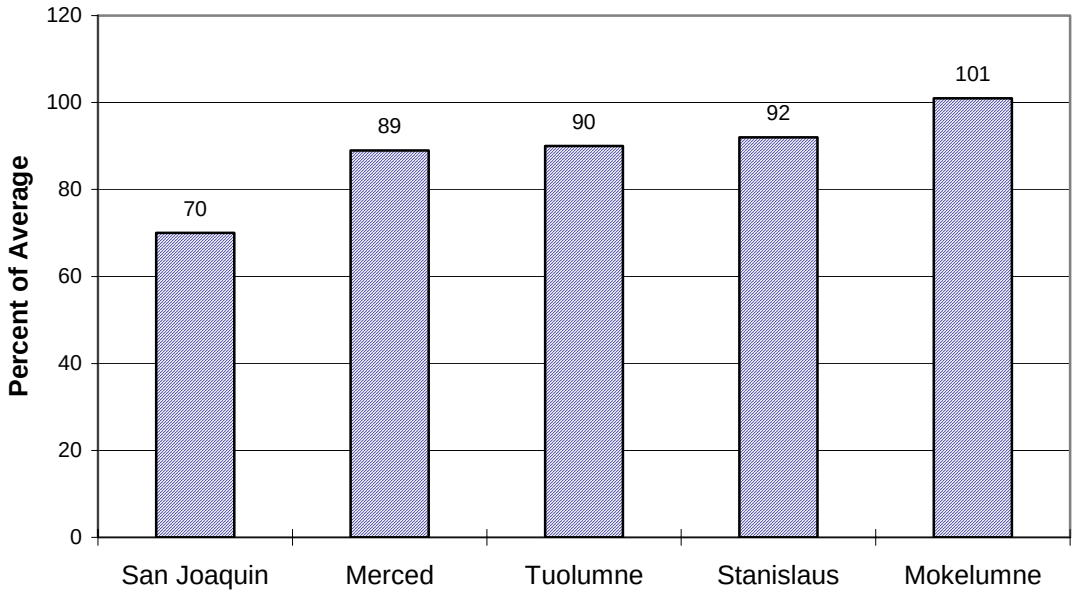
San Joaquin Basin

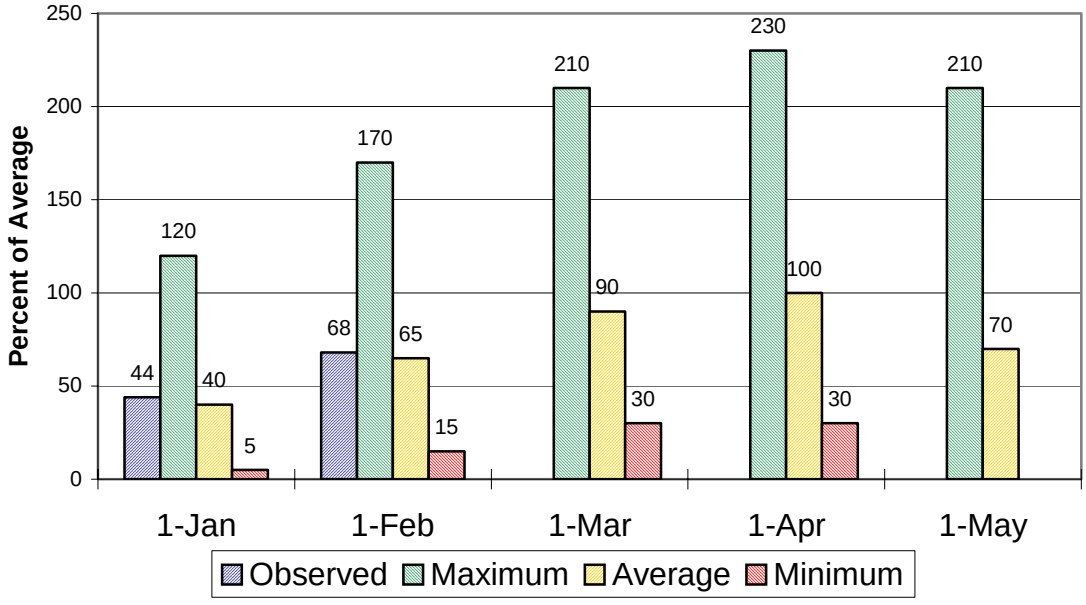
Seasonal Basin Precipitation

October 1 to Date



Seasonal Basin Snowpack

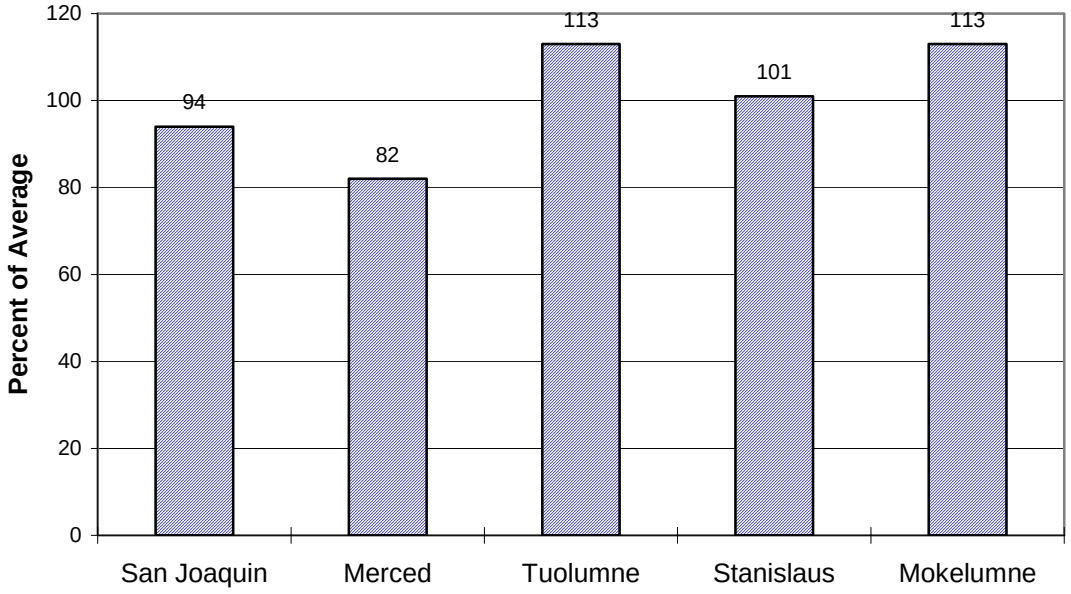
Water Content in % of April 1 Average



San Joaquin Basin

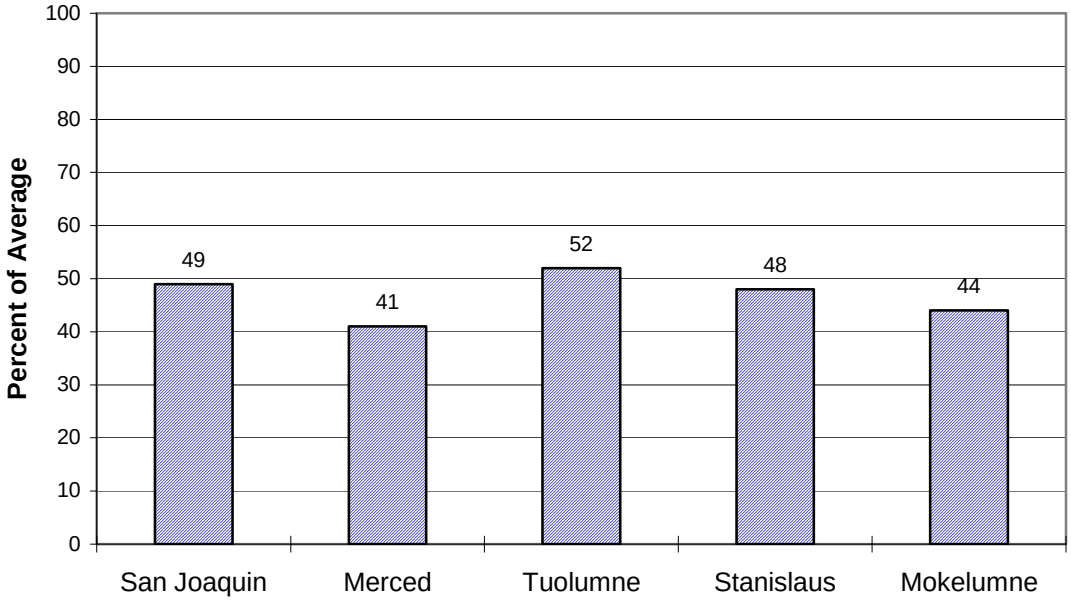
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

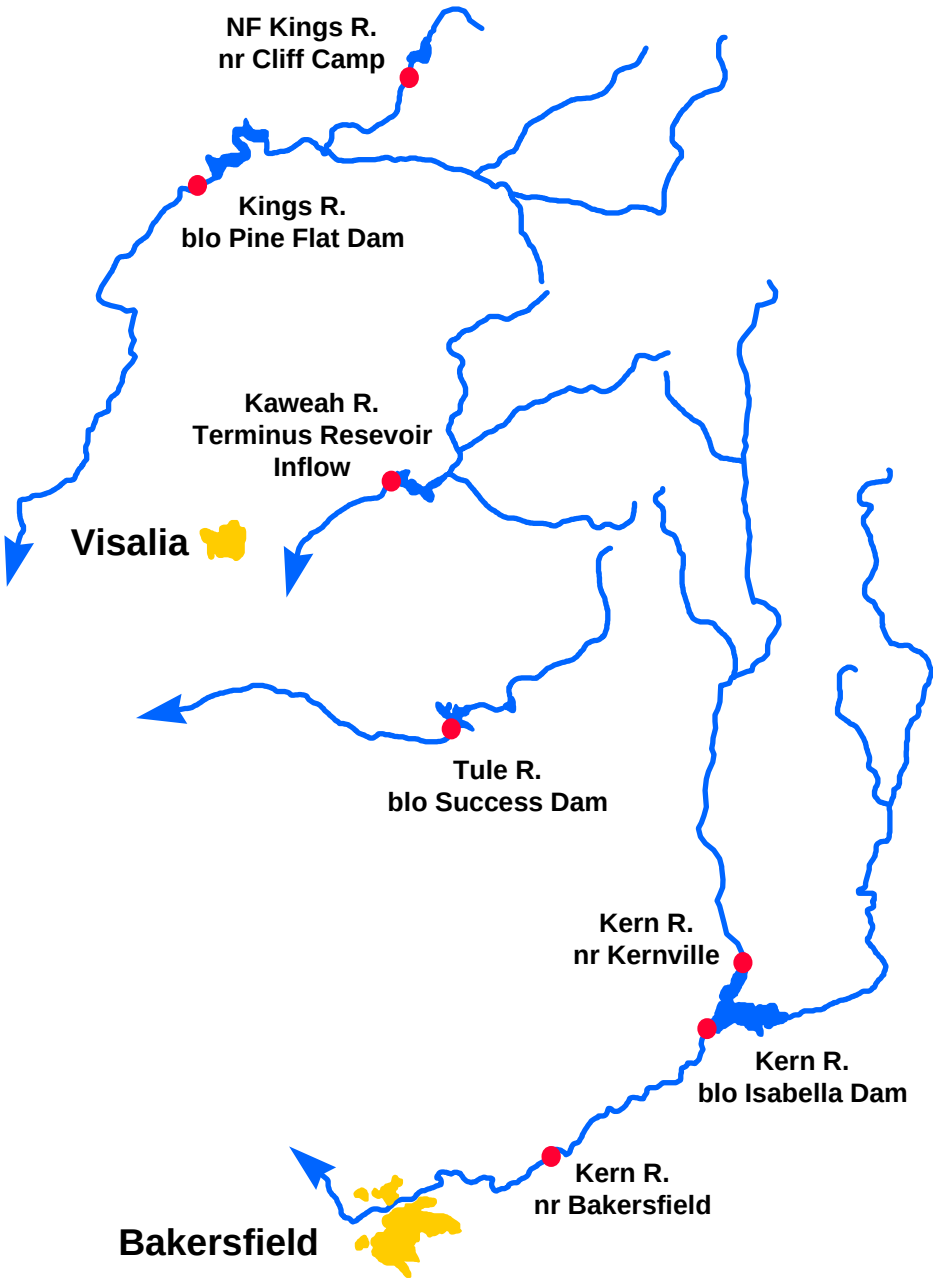


Season Basin Runoff

October 1 to Date



Tulare Basin



Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Kern River						
Kernville, nr	Apr-Jul	280	70	500	90	398*
Isabella Dam, blo	Apr-Jul	320	67	600	100	480
Bakersfield, nr	Apr-Jul	330	67	615	110	490
Tule River						
Success Dam	Apr-Jul	45	68	93	15.0	66
Kaweah River						
Terminus Dam	Apr-Jul	250	86	475	125	290
NF Kings River						
Cliff Camp, nr	Apr-Jul	190	79	305	74	240*
Kings River						
Pine Flat Dam, blo	Apr-Jul	1050	84	1590	510	1250

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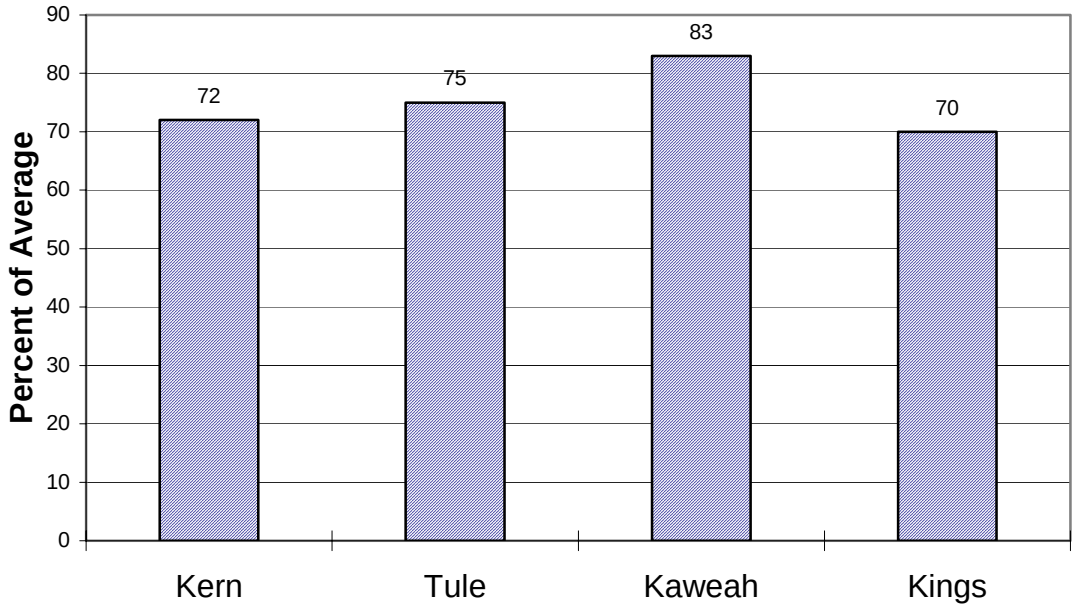
Tulare Lake Basin

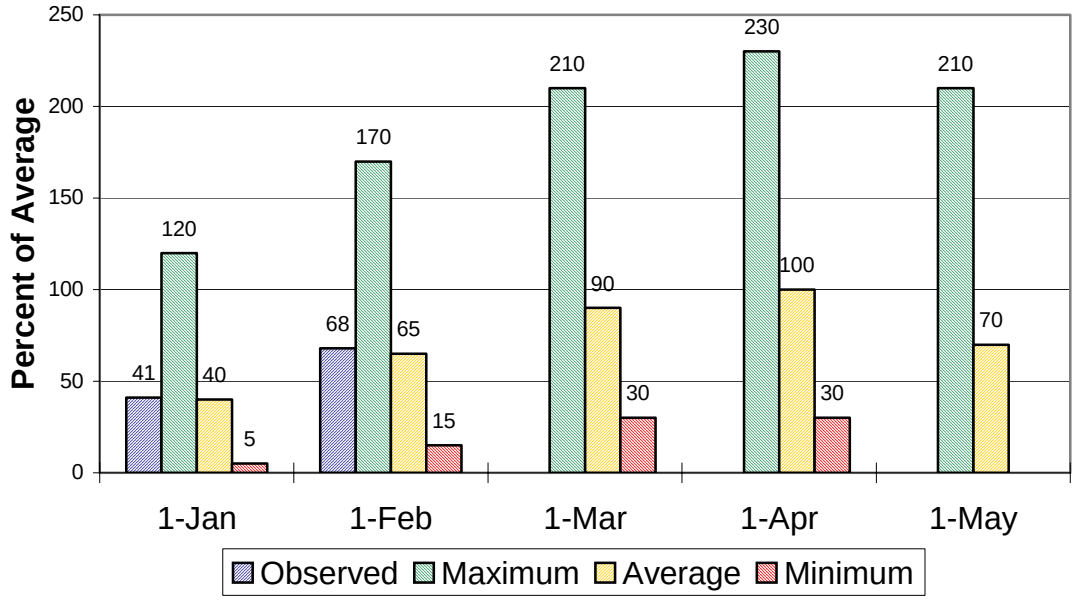
Seasonal Precipitation

October 1 to Date



Seasonal Basin Snowpack

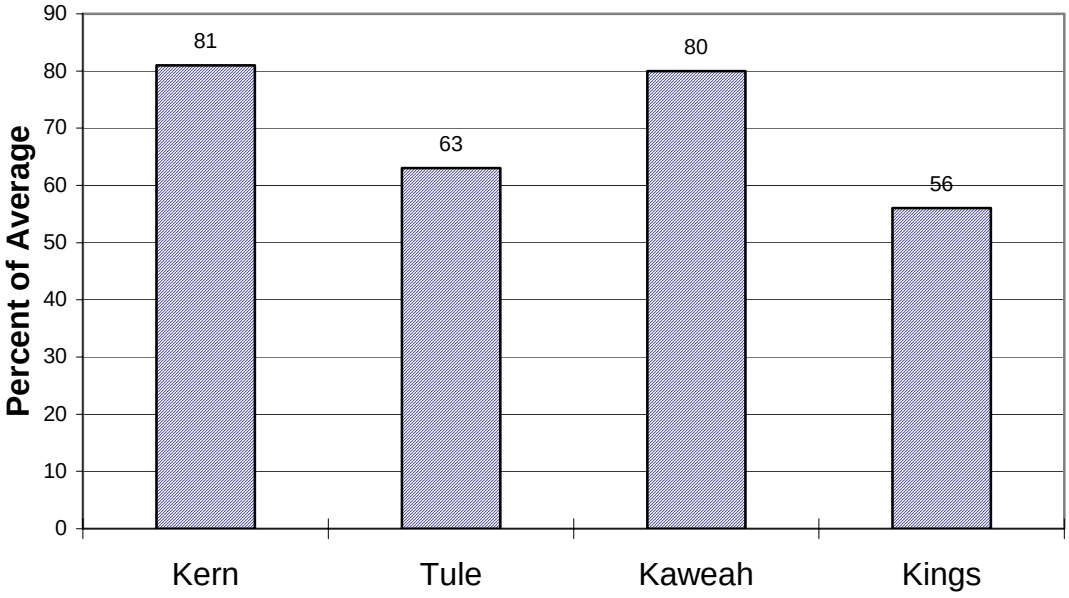
Water Content in % of April 1 Average



Tulare Lake Basin

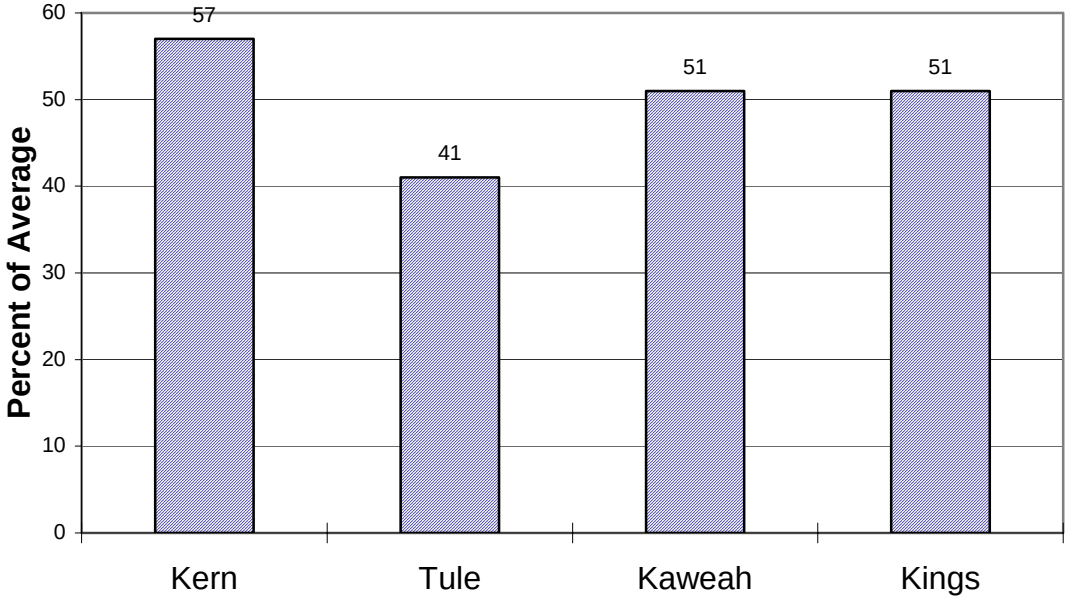
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

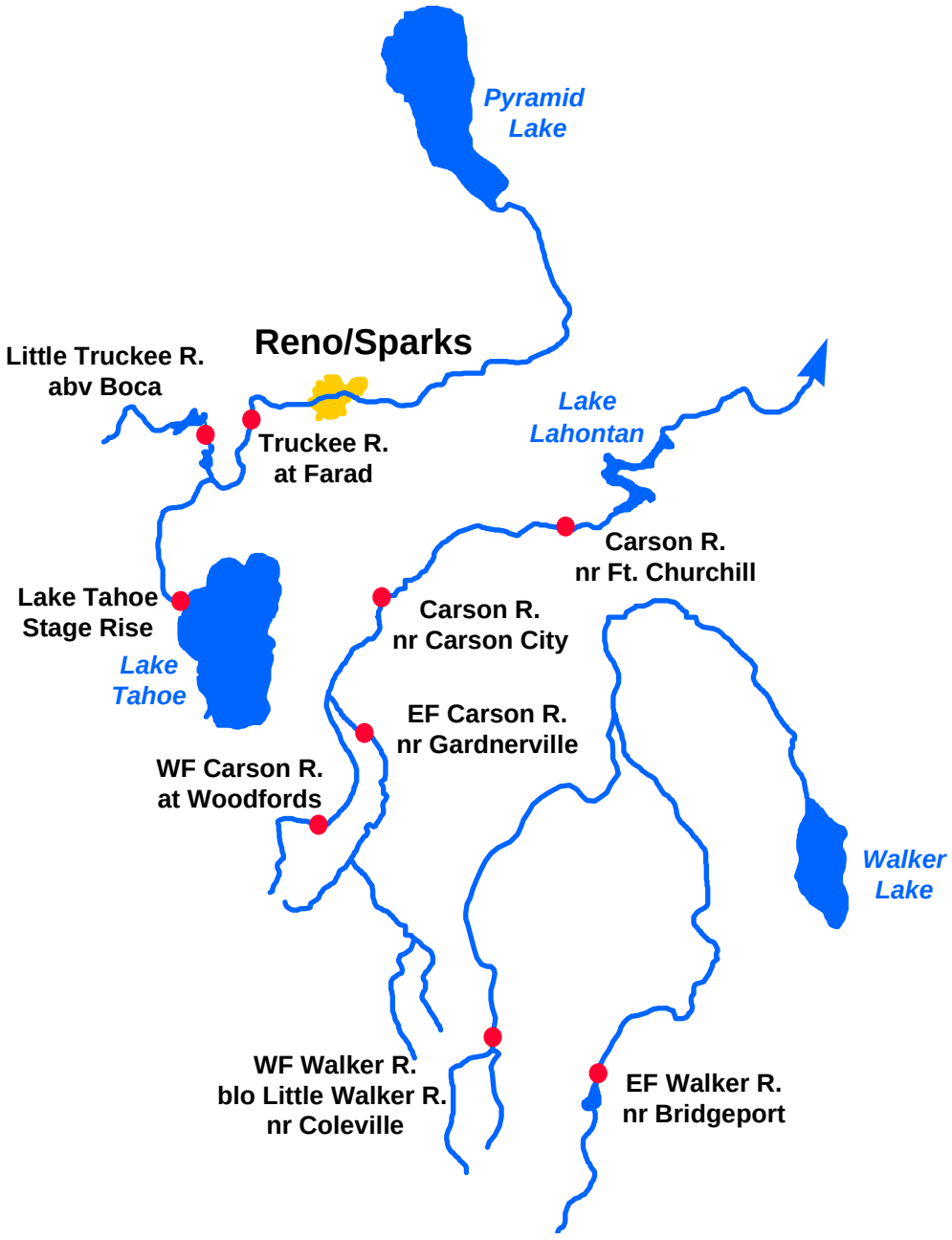


Seasonal Basin Runoff

October 1 to Date



East Side Sierra Nevada Basins



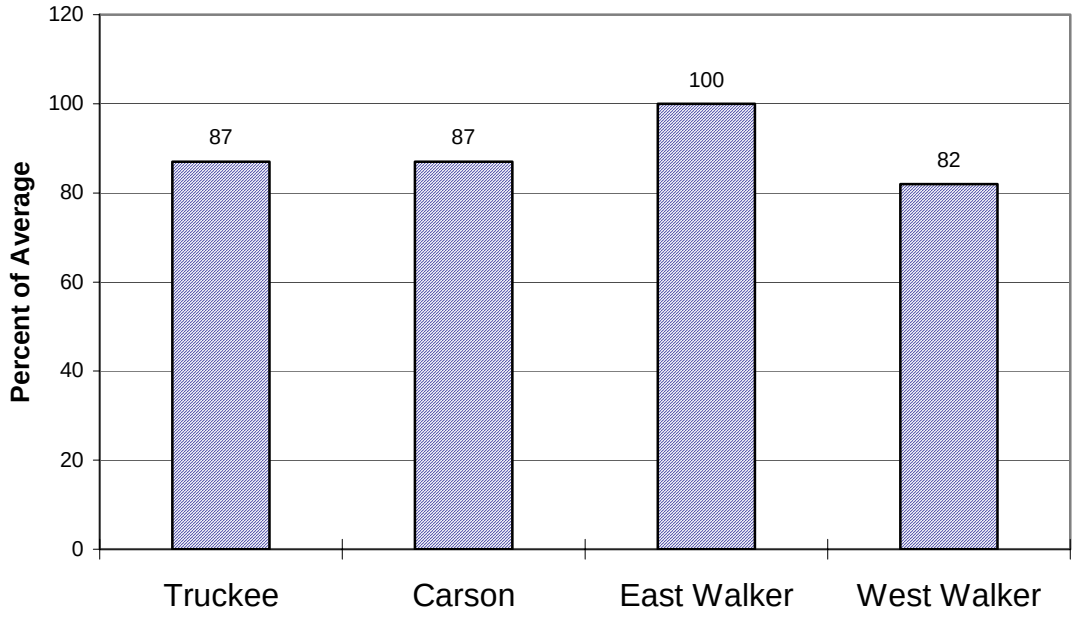
Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Truckee River						
Truckee River						
Lake Tahoe Stage Rise	Apr-High	1.15	83	1.81	0.49	1.38
Ltl Truckee River						
Boca Res, abv, Truckee, nr	Apr-Jul	60	75	80	40	80
Truckee River						
Farad	Apr-Jul	210	81	325	95	260
Carson River						
EF Carson River						
Gardnerville, nr	Apr-Jul	150	79	225	73	189
WF Carson River						
Woodfords	Apr-Jul	46	82	69	23	56
Carson River						
Carson City, nr	Apr-Jul	140	74	235	45	188
Fort Churchill, nr	Apr-Jul	130	73	225	35	178
Walker River						
East Walker River						
Bridgeport, nr	Apr-Aug	55	82	84	26	67
West Walker River						
Ltl Walker, blo, Coleville, nr	Apr-Jul	150	96	220	80	156

East Side Sierra Nevada Basins

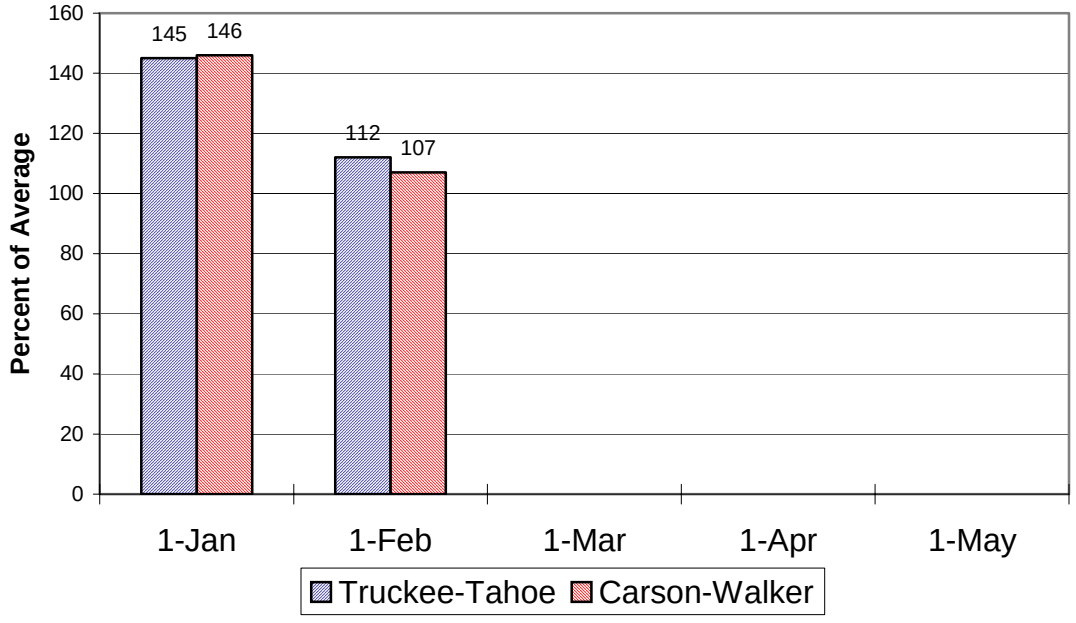
Seasonal Basin Precipitation

October 1 to Date



Basin Snowpack

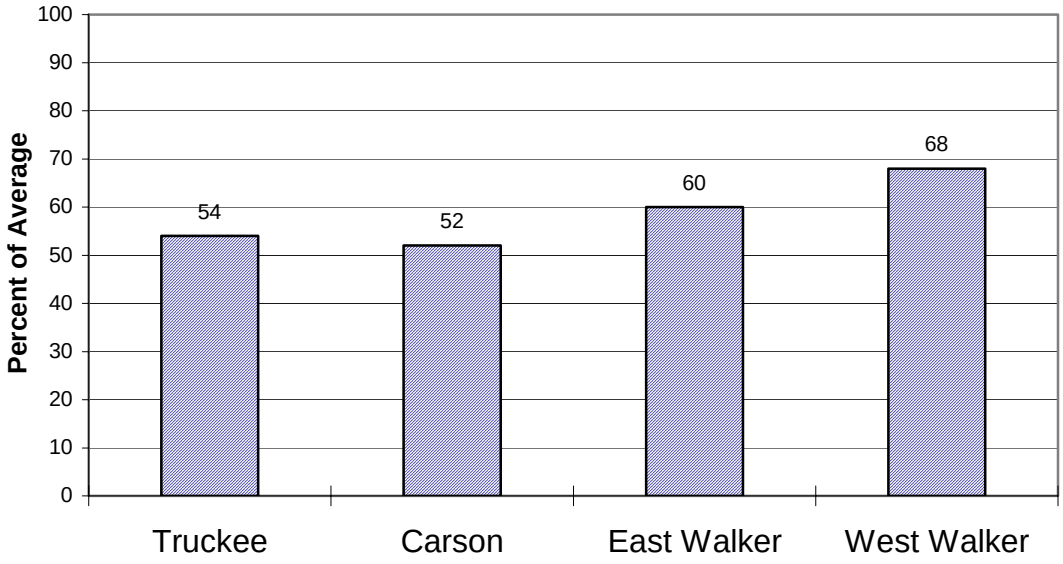
% of Average SWE to Date



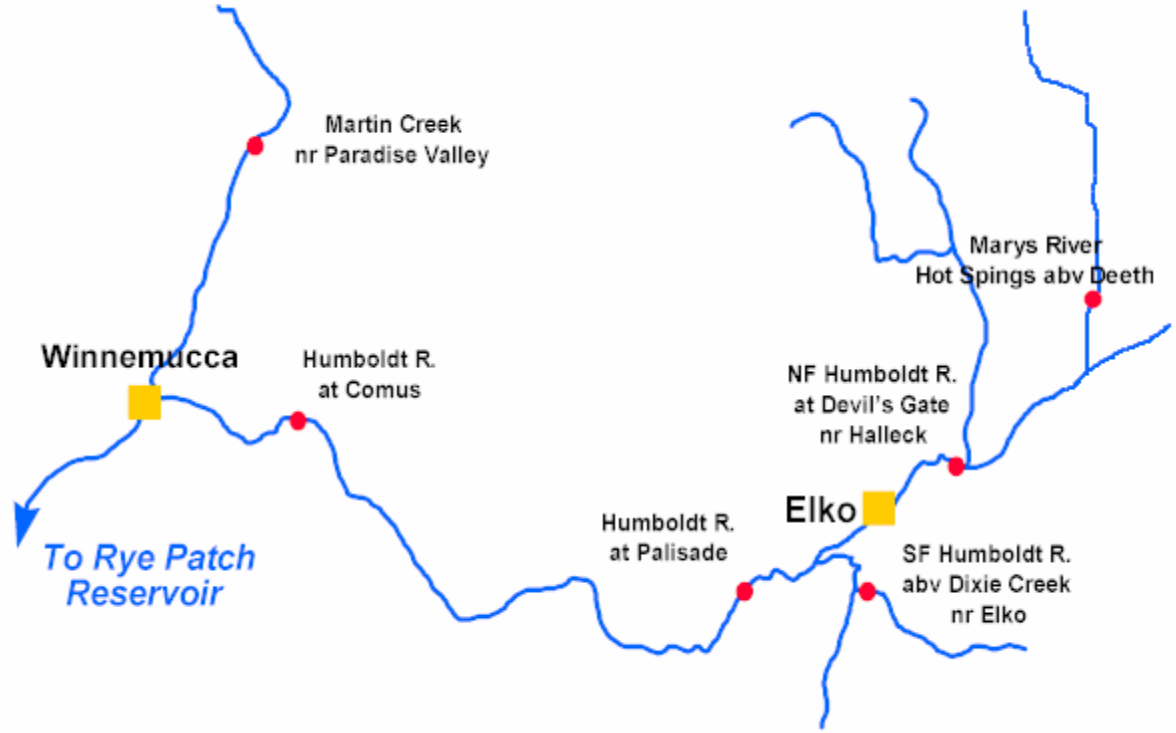
East Side Sierra Nevada Basins

Seasonal Basin Runoff

October 1 to Date



Humboldt River Basin



Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
NF Humboldt River						
Devils Gate, at, Halleck, nr	Apr-Jul	31	91	51	11.0	34*
SF Humboldt River						
Dixie Ck, abv, Elko, nr	Apr-Jul	63	83	105	31	76
Marys River						
Hot Springs, abv, Deeth, nr	Apr-Jul	37	95	60	14.0	39
Humboldt River						
Palisade	Apr-Jul	210	84	375	55	250
Comus	Apr-Jul	175	78	380	50	225
Martin Ck						
Paradise Vly, nr	Apr-Jul	16.0	86	30	6.5	18.7

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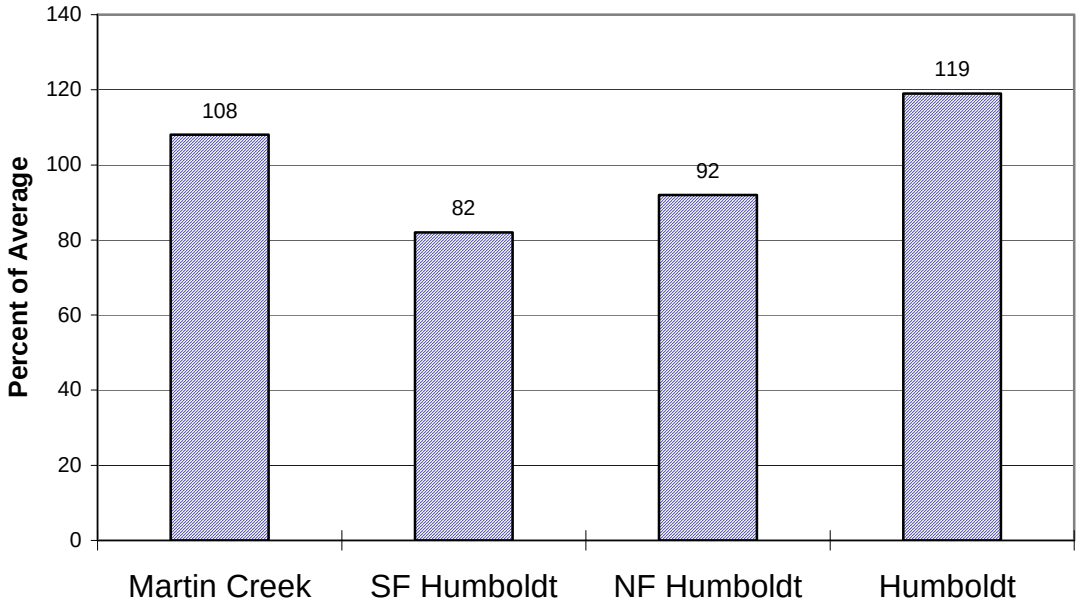
Humboldt River Basin

Seasonal Basin Precipitation

October 1 to Date



Basin Snowpack

% of Average SWE to Date